

carp and thin endocarp. *Seeds* one, large, embedded in the pulp with a thin testa; cotyledons large, unequal, one enclosing the other.

Flowering: April-August; *Fruiting*: July - ?

Distribution: Tengnoupul to Morey, frequently occurring along the trunk road, on forest slopes.

Type: Manipur State, Tengnoupul, 1500 m, 30.7.87, *D.B. Deb* 3549A holotype & B a fruiting panicle (detached from the type) deposited at CAL.

Note: Sundara Raghavan, R. has just published a new species from Burma (vide *Bull.*

Bot. Sur. Ind. 28: 191, 1988), which is very different from the one described here.

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NEW TAXA OF DESMIDS FROM UTTARA KANNADA DISTRICT KARNATAKA STATE (INDIA)¹

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(With four text-figures)

During 1978 in all 72 collections from freshwater permanent ponds and lakes of Uttarakannada District of Karnataka State were made. These samples contained four new taxa of Desmids which are described.

During an extensive survey of freshwater algae of Uttar Kannada District of Karnataka State, we came across four new taxa of Desmids. A total of 72 collections were made during 1978 from permanent ponds and lakes. All these samples are deposited in Department of Botany, Kittel Collge, Dharwad under the Accession No(s). : NK-1 to NK - 72.

Cosmarium cuneatum Josh. var. ***truncatum*** var. nov. (Fig. 1).

Simile typo descripto a Forster 1972 (Tab. 18, Fig. 14, p. 549) e quo differt sinu inaperto in latere interiore et leviter aperto ad latus exterius; margines laterales magis convergentes qui apicem truncatum formant; paries punctatus solum ad regionem verrucarum medianarum. Cellulis a vertice visis ellipticis, latera rectiora convergentia ut forment polos paene truncatos parietibus crassis. Cellulae 43-44 microns longae, 43-44 microns latae; Isthmus 7-8

microns latus, 25-26 microns crassus.

Iconotypus : Fig. 1.

Distributio : NK-70, Kumta.

Similar to the type described by Forster 1972 (pl.18, fig. 14, p. 549). Differs in having the sinus closed on inner side and slightly open towards exterior; lateral margins more convergent and form a truncate apex; Wall punctate only at the region of median verrucae. Vertical view elliptic, sides more straight, converging to form almost truncate and thick walled poles. Cells 43-44 microns long; 43-44 microns broad; Isthmus 7-8 microns broad; 25-26 microns thick.

Iconotype : Fig. 1.

Distribution : NK-70; Kumta.

Cosmarium kanadense sp. nov. (Fig. 2)

Cellulae leviter longiores quam latiores; semicellulae late semicirculares; margines laterales undulati et dentati; anguli basales spinis acutis crassisque praediti; sinus undulatus et latior prope partem exteriorem. Semicellulae annulum spinarum 12 subapicalium longiorum, quae acutae crassaeque sunt, ferentes; ornamentum centrale granula quattuor habet, tria in

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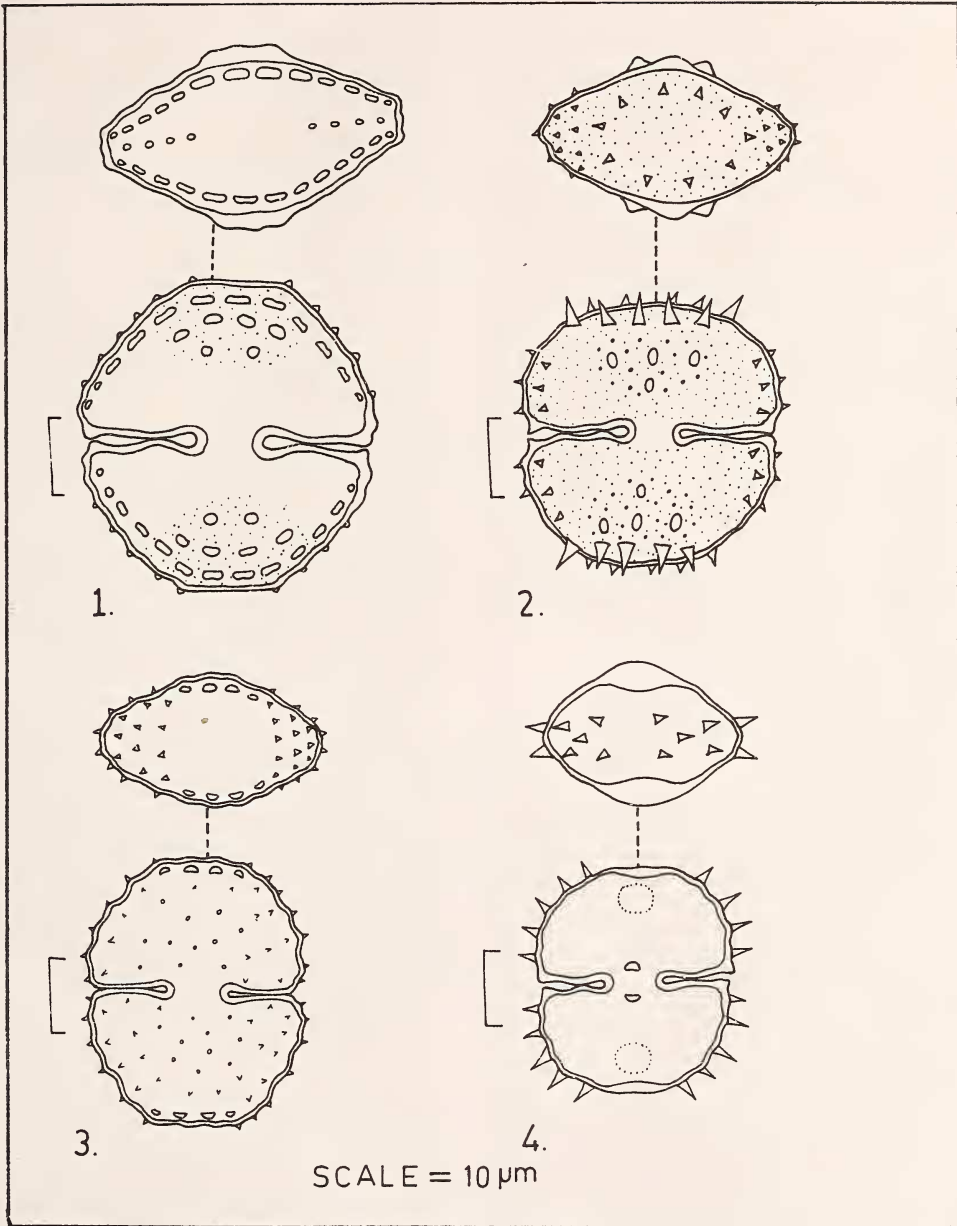


Fig. 1. *Cosmarium cuneatum* Josh. var. *truncatum* var. nov.

Fig. 2. *Cosmarium kanadense* sp. nov.

Fig. 3. *Cosmarium vitiosum* Scott et Gronbl. var. *orientale* Scott et Prescott fa. *egranulatum* fa. nov.

Fig. 4. *Xanthidium tirthalliensis* Bharati et Hegde fa. *incrassatum* fa. nov.

serie una deposita et unum infra depositum, circumcincta a poris maioribus. Paries non valde punctatus. Cellulae visae a vertice ellipti-

cae; poli late rotundati, undulati spinis minoribus praediti; latera granulis medianis praedita; spinae decem in annulo elliptico intramargi-

naliter depositae. Cellulae sine spinis 35-37 microns longae, cellulae spiniferae 38-40 microns longae et 32-36 microns latae; Isthmus 5-7 microns latus, 20-22 microns crassus.

Iconotypus : Fig. 2.

Distributio : NK-37.

Cells slightly longer than broad; semi-cells broadly semicircular; lateral margins undulate with pointed teeth; basal angles possess pointed stout spines; sinus undulate and more broad towards exterior. Semicells bear a ring of longer, pointed and stout 10 subapical spines; central ornamentation has four granules, 3 in a row and one below surrounded by bigger pores. Wall faintly punctate. Vertical view elliptical, poles broadly rounded, undulate and possess smaller spines; sides with median granules; intramarginally 10 spines are arranged in an elliptical ring. Cells without spines 35-37 microns long, with spines 38-40 microns long; with spines 32-36 microns broad; Isthmus 5-7 microns broad; 20-22 microns thick.

Iconotype : Fig. 2.

Distribution : NK-37.

Cosmarium vitiosum Scott *et* Gronbl. var. **orientale** Scott *et* Prescott fa. **egranulatum** fa. nov. (Fig. 3).

Similis typo forma (Scott *et* Prescott 1961; Tab. 31, figs. 1 & 2, p. 73), sed differt amplitudine minore (Cellulae typi 39-42 microns longae, 33-39 microns latae; Isthmus 10-12 microns latus, 20-23 microns crassus). Sunt verrucae subapicales quattuor quarum duae centrales comparate maiores sunt; differt a typo granulis facialibus absentibus; spinae in margine laterali comparate breviores sunt. Pars reliqua spinis brevibus obiecta. Cellulae 30-33 microns longae, 29-30 microns latae; Isthmus 6 microns longus, 17 microns crassus.

Iconotypus : Fig. 3.

Distributio : NK-31, Banavasi (Sirsi).

Similar to the type (Scott and Prescott 1961; pl. 31, figs. 1 & 2, p. 73) in shape, differs by its

smaller size (Type cells 39-42 microns long; 33-39 microns broad; Isthmus 10-12 microns broad; 20-23 microns thick). Of the four subapical verrucae, the central two are comparatively bigger; unlike the type the facial granules are absent; spines on lateral margins are comparatively shorter. Rest of the area covered with short spines. Cells 30-33 microns long; 29-30 microns broad; Isthmus 6 microns broad; 17 microns thick.

Iconotype : Fig. 3.

Distribution : NK-31, Banavasi (Sirsi).

Xanthidium tirthalliensis Bharati *et* Hegde fa. **incrassatum** fa. nov. (Fig. 4).

Planta similis typo (Bharati *et* Hegde 1982; Fig. 2, p. 4-5) amplitudine formaque, sed differt crassitudine subapicali luteola in quaque semicellula. Margo apicalis leviter truncatus parie incrassato interiore. Cellulae sine spinis 27-28 microns longae et 25-26 microns latae; cellulae spiniferae 30-33 microns longae et 29-30 microns latae; Isthmus 5 microns latus.

Iconotypus : Fig. 4.

Distributio : NK-35, Janamane (Sirsi).

A plant similar to the type (Bharati and Hegde 1982; Fig. 2, p. 4-5) in size and shape, differs by having subapical pale yellow coloured incrassation on each semicell. Apical margin slightly truncate with thickened inner wall. Cells without spines 27-28 microns long, with spines 30-33 microns long; Without spines 25-26 microns broad, with spines 29-30 microns broad; Isthmus 5 microns broad.

Iconotype : Fig. 4.

Distribution : NK-35, Janamane (Sirsi).

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REFERENCES

- BHARATI, S.G. & HEGDE, G.R. (1982): A systematic survey of Desmids of Karnataka State and Goa. *J. Karnatak Univ. Sic.*, 27 : 1-6.
- FORSTER, K. (1972): Desmidieen aus dem Sudosten der Vereinigten Staaten von Amerika. *Nova Heavigia*, 23 : 515-644.
- SCOTT, A.M. & PRESCOTT, G.W. (1961): Indonesian Desmids. *Hydrobiologia*, 17 (1 & 2): 1-132.